

Functional effect:

- The ability to lean forward while the long axis of the body remains stable can be practiced as a step toward bending down without increasing pressure on the pelvic floor.
- The motor pattern learned in this way is transferred to everyday situations such as bending down, lifting, and working while bending down.

Alternative procedures

When these functional exercises are performed, contractions of the muscles of the pelvic floor are linked rhythmically to functional movement patterns. When the exercises are repeated once or several times the contraction of the pelvic floor muscles is maintained. The intensity of the effort is graded. The contraction of the pelvic floor is supported by vocalizations (explosive sounds) [Carrière 2002, Heller 1998, Tanzberger 1998b, Tanzberger et al. 2004].

Contractions of the pelvic floor are preceded by imagery. With adequate awareness, the patient can be asked to check whether the pelvic floor is also contracted, by pausing briefly during the final position of the exercise.

Exercises with variable load. The effect of gravity can reduce or increase the load on the pelvic floor depending on the position of the long axis of the body (Fig. 2.88).

- Reducing the load:
 - Using starting positions for therapeutic exercises that relieve the load.
 - Using neutral positions with the long axis horizontal and the pelvic floor vertical in space.
 - Using positions with increased load, upright long axis, pelvic floor horizontal in space.
 - Using positions with increased load and increased rhythmically induced pressure.
- Increasing the load.

Therapeutic exercises and breathing

In general, it is recommended that contractions of the pelvic floor should be linked with expiration [Tanzberger 1998b, Heller 1998, 2002, Carrière 2002] (see also section 4.1). However, this active muscular plate is a stabilizing muscle group, and therefore must also be able to react and contract independently.

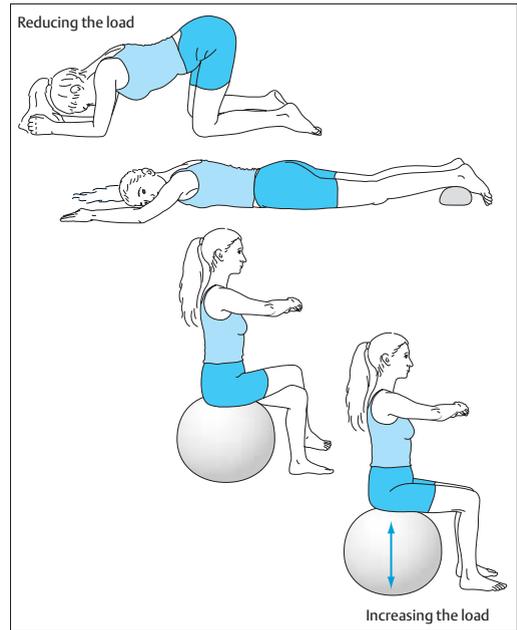


Fig. 2.88 The four different load positions.

It is important that patients should not hold their breath during exercise, since this could induce a Valsalva maneuver. A Valsalva inhibits the spontaneous recruitment of the deep stabilizing muscles.

Closure of the glottis and breath-holding can be avoided by counting breaths and humming. Specially selected vocalizations can also affect pelvic floor contractions—e.g., explosive sounds (“P,” “T,” “K”) used as stimuli and calming sounds (“ah,” “m,” etc.) to relax [Tanzberger 1998b, Heller 1998] (see also section 4.1). The effectiveness of such sounds has been clinically tested, but not yet demonstrated scientifically.

Phase 4: Integrating Pelvic Floor Activities into Daily Stresses—Automating

Therapeutic exercises teach movements. When movements are being learned, the basic concepts and stages always have to be considered until the movements become automatic. Umphred (see section 1.2) has described the stages that are passed through when learning movements [Shumway-Cook and Woollacott 1995, O’Sullivan 2000]:

- Acquisition stage
- Elaboration stage
- Retention stage

O'Sullivan has transferred this model to the training of the primary stabilizers. It describes a cognitive, associative and automatic stage of learning [Schöttker-Königer 2001, p. 59].

The focus of therapeutic exercises at the acquisition stage (cognitive stage) is on isolated contractions in neutral positions. This stage often involves repetitions of the exercises. Feedback procedures facilitate the learning process (see section 1.2).

During the elaboration stage (or associative stage), the contractions are consciously integrated into movement sequences. This process requires an ability to contract confidently and easily. The principal variations and movement sequences are practiced in therapy. External feedback is reduced and discontinued.

During the retention stage (the automatic stage), functional movement sequences are practiced and transferred to everyday situations. The exercise now transfers the recently acquired skills to daily living. Practice is built into everyday life.

To achieve automatic use of the learned movements, the instruction has to be patient-oriented [Klein-Vogelbach 2000]. This approach will lead patients to transfer the therapeutic movement models, individually adapted and self-initiated, into their everyday life. Working with well-timed imagery ahead of the recruitment pattern as part of the instruction has a positive effect (personal clinical experience).

Therapeutic steps.

- As part of the history, reports of typical postures and movements that result in incontinence or pain are elicited.
- Eliciting the critical movement: The postures and movements that aggravate the symptoms are analyzed.
- Analyzing the critical movement: The postures and movements that induce symptoms are addressed in therapeutic exercises that reduce strain by reducing weight, acceleration, coordination, etc.
- Selecting the degree of strain adapted to “degree of excitability of the symptoms”: The demands of the exercise are increased until they reach the movement and strain that are present in everyday life. Increasing the coordinated load leads to the movement becoming automatic.

Case study

Patient Y: Symptoms: first-degree incontinence.

Trigger: Playing tennis: stopping and forehand strokes. The incontinence problem was not severe. Laycock muscular testing showed no significant strength deficits.

Functional exercises:

“Acquisition”: External rotation and abduction of the thigh at the hip joint was practiced to exercise the muscles of the pelvic floor in isolation.

“Elaboration”: The isolated movement of the pelvic floor muscles was linked to acceleration and stopping of arm movements, as in a tennis forehand. The same sequence of movements was practiced in combination with a modified ball exercise (“cocktail party”) [Klein-Vogelbach 1995].

Automating and “retaining” the movement: The patient practiced the link consciously while playing against a wall and during actual play.

Specific triggers commonly elicit specific types of incontinence. As an example, two classic types of stress that typically induce incontinence are described below.

Stress incontinence; inducing symptom: bending down and lifting.

“Acquisition”/cognitive stage:

- Separate contractions of pelvic floor muscles are linked to movements extending the pelvis on the lumbar spine and flexing the hip and knee joints.

“Elaboration”/associative stage:

- Individual contractions are linked to the transition from sitting to rising.
- Contractions are linked to the movement sequence standing—bending down.
- The contraction exercises are linked to making a fist or grasping an object.

“Retention”/automatic stage:

- When making a fist, the patient is asked to visualize narrowing of the urethra and anal ring.
- The combination of contractions is then practiced during movements that are performed daily (emptying the dishwasher, carrying a laundry basket, etc.).

In the course of teaching the exercises, contraction of the pelvic floor muscles is anticipated by

visualization. The preparation is linked especially with grasping movements of the hand. In this way grasping movements of the hand, which always precede lifting of heavy loads, lead to automatic increase in the tone of the pelvic floor muscles.

Conscious coordination of pelvic floor contractions is then replaced by palpation after the task is completed.

Trigger pattern: coughing

Exercises for the movement pattern associated with coughing are similar to those used for lifting. A person who coughs or sneezes will habitually bring up a hand to shield the mouth. This movement precedes the effort, and so can be linked to contraction of the pelvic floor and therefore used to activate those muscles automatically in a timely manner.

Procedure:

- Pelvic floor activity is linked to hand movement (Fig. 2.89).

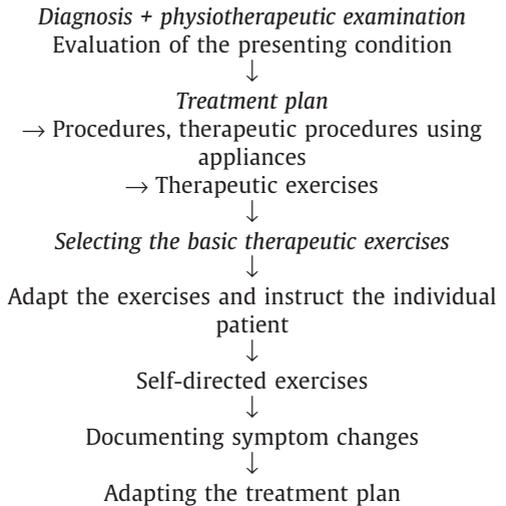


Fig. 2.89 Linking pelvic floor contraction to hand movement.

- An image reinforces the link of the pelvic floor contraction to the movement of the hand: “The hand swings the pelvic floor inward.” Once the movement is associated in this way, it can be practiced by increasing pressure—e.g., by making explosive sounds and/or jumping on the ball [Carrière 2001, 2002].

■ Adapting Therapeutic Exercises to Various Diagnoses and Symptom Presentations

Functional exercises are adapted to the diagnosis and the presentation of the individual symptoms. To develop a plan for functional exercises, the medical diagnosis must be fully understood. By the same token, the type and extent of the dysfunction have to be thoroughly evaluated by the physiotherapist.



Adapting the Exercises to Ligamentous and Fascial Insufficiency/Descent

(See also section 4.3.) The position of the organs in the pelvic floor is secured and supported not only by muscles but also by ligamentous and fascial suspension. Insufficiency of these connective-tissue stabilizers causes various types of uterine descent. These can result in disorders of continence and pain syndromes in the pelvis and the lumbar spine.

Therapeutic goals in uterine descent

- Building sufficient muscular strength and endurance to support the pelvic organs from below and to secure their position in the abdominal cavity anteriorly and posteriorly by the muscular slings of the transversus abdominis and the intrinsic muscles of the spine.
- Relieving strain on the pelvic floor (develop positions that take the load off the pelvic floor).

Adapting the exercises. Exercise in relaxing positions, gradually increasing the gravity weighting: relaxing position → neutral position → strain position → strain position with induced pressure.

Using positions that reduce stress in everyday tasks. Relaxing positions can be introduced consciously into everyday tasks in order to correct the position of the organs.

Effect of the position of the spine on downward pressure. When the spine is upright, the symphysis is positioned under the abdominal cavity and takes over a major portion of the abdominal weight. The pelvic inlet is tilted forward and downward (Fig. 2.90).

If the lumbar spine is flexed, the effect of the abdominal and thoracic cavities is directed into the middle of the true pelvis. The pelvic floor is constantly subjected to pressure. For this reason, it is important to include postural training, and in the course of everyday tasks constantly to correct the destabilizing flexion of the spine, opposing the downward displacement of the pelvic organs. In the presence of severe insufficiency of the

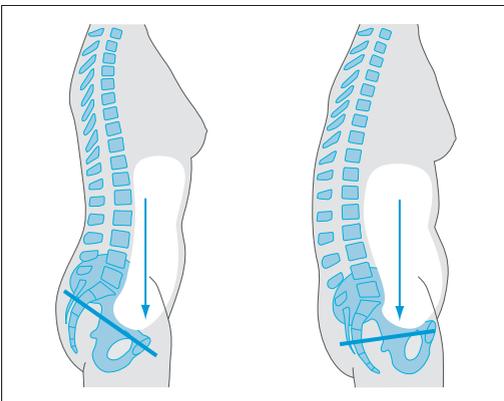


Fig. 2.90 Pressure transfer in the abdominal cavity.

ligaments, use of a supporting pessary may be considered in consultation with the referring physician.

Adapting the Exercises to Urgency

Postural changes during evacuation. Active termination of micturition or defecation [Tanzberger 1998b]: in micturition and defecation, the vesicourethral and anorectal angles descend backward and downward while they increase. At the termination of evacuation, the pelvic floor returns to its original position and the tone of the external sphincters increases. This natural process can be enhanced consciously at the end of evacuation by brief rhythmic contractions of the pelvic floor muscles or actively maintained contractions (3×10 s).

Activating the external sphincter muscles and pelvic floor muscles probably affects the ability of the detrusor to relax [Bø and Berghmans 2000]. As soon as voiding is completed, emptying of the bladder leads to a stable storage phase. Actively terminating voiding regularly in this way several times a day ensures routinely repeated practice (as a side effect).

Strategies for deferring voiding in the presence of urgency

- Using gate control: pressure on the perineum, clitoris, or glans sends afferent sensory impulses to the sacral cord. This can lead to an overlap of impulses in the parasympathetic efferents.
- Rhythmically repeated contractions of especially the sphincters, or one strongly maintained contraction lead to increase in urethral closure pressure and inhibition of the detrusor muscle [Bø and Berghmans 2000].
- “Conversation with the bladder”—the patient visualizes the actual filling of the bladder and engages the organ in a calm conversation “between partners.” These approaches are designed to prevent the first inkling of urgency leading to immediate contemplation of using the toilet, while establishing an emotionally calm situation [Tanzberger 1998a, 1998b].
- Stress can be relieved by postural changes and relaxing positions.

Changing known situations leading to urgency (strategies for changing the scene). Urgency is often linked to recurring everyday situations. Behaviors can be linked to situations that occur daily, just as in the case of chronic pain. In such

cases, urgency supervenes without the presence of an organic lesion. Such links to known behavioral patterns can be undone and the daily situation can be given a new slant (personal experience, derived from the theory of the genesis and treatment of chronic pain syndromes) [Gifford 2000].

Example

Trigger: When parking the car in an underground garage, Mrs. A. experienced sudden intense urgency.

Management:

While driving:

- Visualize filling of the bladder
- Adjust posture
- Adopt a relaxing position
- Repeat moderate pelvic floor contractions
- Become conscious of breathing

When parking:

- Change the last part of the way home
- Vary parking habits: backing the car into the space, etc.

Adapting the Exercise Programs to the Findings in the Individual Patient's Muscles

In the course of the physiotherapeutic examination, the predominant type of muscle weakness in the pelvic floor is determined. Deficits in maximal strength, strength endurance, rapid contraction and reactive contraction are tested and documented for later comparison [Laycock 1994].

The exercises are adapted to the individual's daily stressors with respect to intensity, endurance, repetition and linkage.

A physiotherapeutic examination ensures that the exercise program can be adapted effectively to the individual.

Example

Patient: Stress incontinence grade 1–2; status post hysterectomy; para 1; normal delivery.

Muscle findings: 3/5/2/8 (in the Laycock scheme; see section 4.3, p. 385).

Interpretation: There was a loss of strength and strength endurance. The exercises were therefore carried with a duration of 4s and few repetitions. The same approach was for linkage with everyday movements. An exercise program designed to improve strength was developed and practiced daily. The exercises were started with the "acquisition" (cognitive) stage.

Example

Patient: Stress incontinence grade 1–2; two children, normal spontaneous delivery.

Muscle findings: 4/7/8/5; the perineum descending on increased abdominal pressure.

Interpretation: Reactive urine loss linked to coughing, sneezing, laughing. There was no significant loss of strength or strength endurance, but rapid contraction and reactive strength were diminished. Exercises were focused on brief rapid contractions and linkage with everyday movements. The exercises were started at the stage of "elaboration and automation."

■ Demonstration of Effectiveness

The effectiveness of therapeutic exercises can be evaluated and documented by reference to the symptomatology. Evidence of effectiveness may include:

- Pad test
- Results of palpation
- Voiding protocol
- Subjective assessment of pressure symptoms (visual analogue scale)
- Quality of life chart
- Comparison of posture and movements provoking symptoms

The effectiveness of active exercise treatments (with or without biofeedback) has been examined repeatedly since Kegel first published the results of his studies [Kegel 1948]. The results of treatment and secondary prophylaxis of stress incontinence have been positive. The effectiveness of pelvic floor training for urge incontinence has not yet been evaluated adequately.

Similarly, the relationship between pelvic floor dysfunction and sacroiliac instability has been insufficiently examined. Clinical experience indicates that targeted use of pelvic floor and abdominal exercises for pain resulting from instability or asymmetry of the bony pelvis can make an important difference.

■ Individual Therapy vs. Group Therapy

Even when manifest continence disorders are minor, each patient has to be examined individually and the exercise program needs to be individually adapted. Individual therapy facilitates therapeutic dialogue, which—especially when working on the pelvic floor—often leads to discussion of intimate personal matters.

Working in small groups can be instituted at the same time as, or following, individual treatment. This type of work can be seen as therapeutic progress, especially when the social life of those affected by the continence disorder has been impeded.

■ Conclusion

Success in rehabilitating the pelvic floor with the use of therapeutic exercises requires a thorough examination and the adaptation of exercises to the patient's pathology and presenting symptoms.

It has been evident since Kegel's studies [1948] that training of the pelvic floor muscles can lead to improvement in various disorders of continence. Active exercise treatment of disorders of the pelvic floor should be related to the underlying functional disturbance as closely as possible. Every effort should be made to link the exercises and triggers used in training closely to habitual everyday movement sequences. As in all movement therapy using self-directed exercises, the extent to which patients can be motivated to exercise regularly in their own time is decisive. The more the exercises offered in therapy are related to everyday functions, the more likely it is that patients will be prepared to transfer them to their daily life.

An individual's access to her own pelvic space and the awareness of this part of her body can be impeded by a history of traumatic or compulsive experiences (e.g., being raised with compulsive cleanliness or sexual trauma). Thus, the therapist working with the pelvic floor often finds that symptoms are manifestly influenced by emotional factors or social constraints. If the therapist is able to help the patient take a new approach to her multilayered awareness of this body region, therapy can achieve a change at all levels of her illness.

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